

Symmetrical Snowflakes



Kit contains:

- 1 sheet of blue paper
- 18 strips of paper ($\frac{1}{2}$ in. x $8\frac{1}{2}$ in.)
- 1 paper hexagon

You will need: scissors and tape or glue.



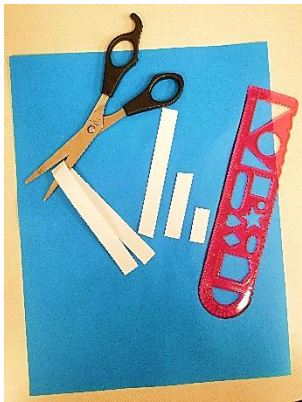
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INSTRUCTIONS

Step 1. Tape or glue your hexagon to the center of your blue piece of paper.

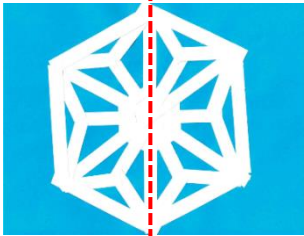
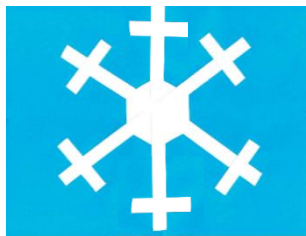
Step 2. Turn 15 of the paper strips into smaller pieces as follows. (The rest are extras just in case you need a do-over.)

- Fold all of the pieces in half. Cut. This makes strips that are $4\frac{1}{4}$ inches long. Set 12 aside.
- Fold the other 18 pieces in half again. Cut. This makes strips that are $2\frac{1}{8}$ inches long. Set 24 aside.
- Fold the other 12 pieces in half yet again. Cut. This makes 24 strips that are all $1\frac{1}{16}$ inches long.



Phew! You're done with this part.

Step 3. Use the cut strips of paper to create snowflakes. Work from the hexagon out to preserve symmetry. Start with longer strips to create the branches and use shorter strips for the details. Challenge yourself to make the following designs. Then create your own.



(just one of the lines of symmetry)

Tape or glue the strips in place when you've created a snowflake you'd like to keep.

HOW DO SNOWFLAKES FORM?

A process called **crystallization** occurs when liquid water changes to a solid ice crystal due to freezing temperatures. When these ice crystals along with water vapor combine, a snowflake is made. Water molecules form in a hexagonal shape, which is why all snowflakes display 6-fold radial symmetry (meaning all 6 of their sides are the same). The snowflake's path from the cloud to the ground creates its unique appearance. The odds of two snowflakes being exactly alike are about 1 in 1 million trillion (1 in 1,000,000,000,000,000,000).

